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Conference Abstract

A decade of the India Biodiversity Portal: Planning ahead with technology to enhance citizen science participation in India

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Abstract

The India Biodiversity Portal (IBP) was initiated a decade ago, aiming to aggregate data on all species within India. The portal has been running a citizen science module for the past 8 years, aggregating observation data from the general public. The portal runs many flagship citizen science campaigns, such as the Neighborhood Trees Campaign, National Moth Week, Spotting Alien Invasive species, Mapping Indian Snails and Slugs and Frogwatch. We have learnt valuable lessons in harnessing participation in citizen science, implementing functionality and in integrating technological advancements into the platform codebase. Following up on these, we are implementing new features that will streamline development, entice users and further spur participation. We discuss some of the proposed changes and our justification, including the impacts we expect in generating better citizen science data.

A key lesson arising out of our campaigns in remote regions of India, where internet penetration is relatively new, is that most users are connected to the web exclusively through a mobile device. Most do not have access to a personal computer or an email account. Yet they are internet savvy and use mobile applications to accomplish complex tasks such as banking activities, often logging in and being authenticated exclusively

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through a mobile number. We are implementing short-messaging-service (SMS) or one-time password-based login mechanisms, for login even without an email account for authentication. Although many initiatives have been investing in platform-specific mobile apps to cater to a growing mobile user community, maintaining and updating multiple mobile apps alongside enhancements to the web version is a resource-intensive task that most platforms cannot afford. Inconsistency in functions and usability across different versions of the same platform may lead to gaps in data collection. To address this challenge and streamline development, we have begun updating the portal codebase to enable Progressive Web Apps, which will replace conventional mobile applications while also serving as Single Page Applications that provide a unified experience across device platforms and alleviating the need for updating mobile apps separately.

For existing contributors on the portal, comparisons of their contributions against other users are a motivating factor to contribute further. Leaderboards and reputation systems are proven methods to promote activity and provide recognition to participants. Such leaderboards also incentivise newer participants to emulate leaders and climb the boards. We are building a reputation system that not only recognizes quantity but also the quality of the user's contribution. In addition, we are working on integrating intelligent push notification technology that will constantly engage users by keeping them abreast of activity related to content reflecting their interest on the portal. These features are expected to engage contributors and keep them motivated towards further data contributions.

Finally, the most rewarding outcome from contributing citizen science data is in visualizing its impact. The most obvious are improvements in species distribution maps that are generated for each species page on the portal. Users are greatly motivated by contributing data that may enhance known distributions and may constitute range extensions for a species. Distribution maps on the portal are being revamped so that information is presented to the user in real-time through visualisations that are are both attractive and easy to interpret. These will provide users with gratification and help spur participation further.

IBP is also instituting the ability to automate the classification of its data to identify publication-grade data. Through a combination of user's reputation and other data quality criteria, the data on IBP will be automatically graded, allowing such data to be pushed to Global Biodiversity Information Facility on a periodic basis as a Darwin Core Archive, contributing to global biodiversity data.

Keywords

citizen science, technology, participation, biodiversity, biodiversity data, progressive web app, reputation system, leaderboards, mobile application, India, India Biodiversity Portal

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